

ABSTRACT OF THE DISCLOSURE

A semiconductor manufacturing process wherein a dielectric layer is plasma etched with selectivity to an underlying and/or overlying stop layer such as a silicon nitride layer. The etchant gas includes a hydrogen-free fluorocarbon reactant such as C_xF_y gas wherein $y/x \leq 1.5$, an oxygen-containing gas such as O_2 and a carrier gas such as Ar. The etch rate of the dielectric layer can be at least 10 times higher than that of the stop layer. Using a combination of C_4F_6 , O_2 and Ar, it is possible to obtain dielectric:nitride etch selectivity of greater than 30:1 and nitride cornering etch selectivity of greater than 20:1. The process is useful for etching vias, contacts, and/or trenches of a self-aligned contact (SAC) or self-aligned trench.